

GOLF CLUB ESTATES (PWSNO 1090103) SOURCE WATER ASSESSMENT REPORT

February 25, 2003



State of Idaho Department of Environmental Quality

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SOURCE WATER ASSESSMENT FOR GOLF CLUB ESTATES

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For non-community transient water systems like Golf Club Estates, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Golf Club Estates* describes factors used to assess susceptibility to contamination. The analysis relies on information from the well log; an inventory of land use inside the delineation boundaries, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheet for Golf Club Estates is attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Well Construction. The Golf Club Estates water system serves the Priest Lake Golf Course, a restaurant, and 11 seasonal homes near Highway 57 at Priest Lake, Idaho. Well #1 is 70 feet deep and was drilled in 1979. It has an 8-inch steel casing that extends from 24 inches above ground to 53 feet below with a puddling clay surface seal that is 20 feet deep. Both the casing and surface seal terminate in sand. The well is screened between 53 and 63 feet. Static water level in the well is 14 feet below the surface. With the pump set at 20 feet, the well produced 60 gallons per minute when tested at the time of drilling. Except for a minor variation in the well casing thickness the well meets current Idaho Department of Water Resources construction standards.

Plans for the installation of a second well and 14,000 feet of mains to provide water for a 75-unit housing development were approved in February 2000. The well was drilled in April 2000. The well log reports that the well is cased with 12-inch diameter casing from 2 feet above ground to 70 feet. It does not specify the gauge or material used for the casing. Details are also lacking about the perforations/ screens installed 80 to 15 feet below the surface. The bentonite surface seal is 19 feet deep. Both the casing and surface seal terminate in sand. Static water level in Well #2 is 10 feet below ground.

When it was inspected in June 1999 conduit for submersible wires entering Well #1 casing was broken below the well cap and the well needed to be properly vented. The reservoir needed to be cleaned and repaired. Repairs needed to bring the well into compliance with the *Idaho Rules for Public Drinking Water Systems* were completed in conjunction with drilling the new well.

Well Site Characteristics. Hydrologic sensitivity scores are derived from information on the well log and from the soil drainage classification inside the recharge zone delineated for your well. Soils covering recharge zones delineated for Golf Club Estates wells are poorly drained to moderately well drained. At the Well #1 site, a foot of sandy topsoil and 24 feet of fine sand lie over the water table. The most productive level of the well is in a layer of coarse sand lying 45 to 65 feet below the surface.

An extra point was marked against Well #2 in the hydrologic sensitivity portion of the analysis. Water was first encountered only 10 feet below the surface in Well #2. Soils over the water table are composed of permeable sand and gravel. The most productive level appears to be a layer of medium sand 68 to 85 feet below the surface. Air testing at the time of drilling produced an estimated yield of more than 200 gallons per minute.

Potential Contaminant Inventory. Land inside the recharge zone delineated for the Golf Club Estates well is put to commercial, residential and recreational use. Homes in the area are connected to the Outlet Bay Sewer District system. Priest Lake Golf Course occupies about 25 percent of the delineated area. Golf courses are potential sources of inorganic, synthetic and volatile organic contaminants found in turf maintenance products. Well #1 is about 150 feet from Highway 57 and 250 feet from a gas station with an underground fuel storage tank. Petroleum products contain numerous regulated volatile and synthetic organic compounds. Highway 57 was discounted as a potential contaminant source since it carries a relatively low volume of truck traffic. Well #2 is approximately 200 feet north of Well #1.

Water Quality History. Golf Club Estates Well #1 has had no water quality problems. Quarterly tests for total coliform bacteria have all been negative. Annual tests for nitrates show concentrations ranging from undetectable levels to 1.26 mg/l. The Maximum Contaminant Level for Nitrate is 10 mg/l. Test results for Well #2 are not available.

Susceptibility to Contamination. The susceptibility analysis of the Golf Club Estates Well #1, incorporating information from the public water system file, and the potential contaminant inventory, ranked the well moderately susceptible to contamination. Risk factors related to local geology added the most points to the final susceptibility scores. Well #2 was not assigned a final ranking since water quality test results are not available. The ground water susceptibility work sheets for your system are on pages 6 and 7 of this report. Formulas used to compute final scores and susceptibility rankings are at the bottom of the worksheet.

Source Water Protection. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Operating and maintaining the wells in compliance with the *Idaho Rules for Public Drinking Water Systems* is the best drinking water protection tool available to Golf Club Estates. The system operator needs to inspect the wellheads and reservoirs routinely and attend to repairs as the need arises so serious deficiencies such as were documented in the last sanitary survey are not allowed to develop again. It is always less expensive to maintain an existing source than to have to replace one damaged through neglect.

With both wells located on golf course property, maintenance personnel need to be reminded frequently to keep applications of pesticides, herbicides and fertilizers at least 50 feet from the wellheads. Sources of contamination near the wells are a greater threat to water quality than contaminants further away, especially in an area like this where the water table is very shallow and covered with permeable soils that can do little to retard the vertical transport of contaminants from the surface. The golf course should be encouraged to investigate integrated pest management and nutrient management in order to minimize use of potential ground water contaminants. A facilities management plan should also be developed that ensures proper storage of turf maintenance chemicals, equipment and fuel. Irrigation, especially in the vicinity of the wells should be limited to be the minimum amount necessary to maintain the turf without allowing transport of applied fertilizer or pesticides below the root zone. Covering the wellheads to prevent damage from mowing equipment should also be considered.

Every system should develop an emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website (www.deq.state.id.us/water/water1.htm) to guide systems through the emergency planning process.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

Assistance. Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning.

Coeur d'Alene Regional DEQ Office (208) 769-1422

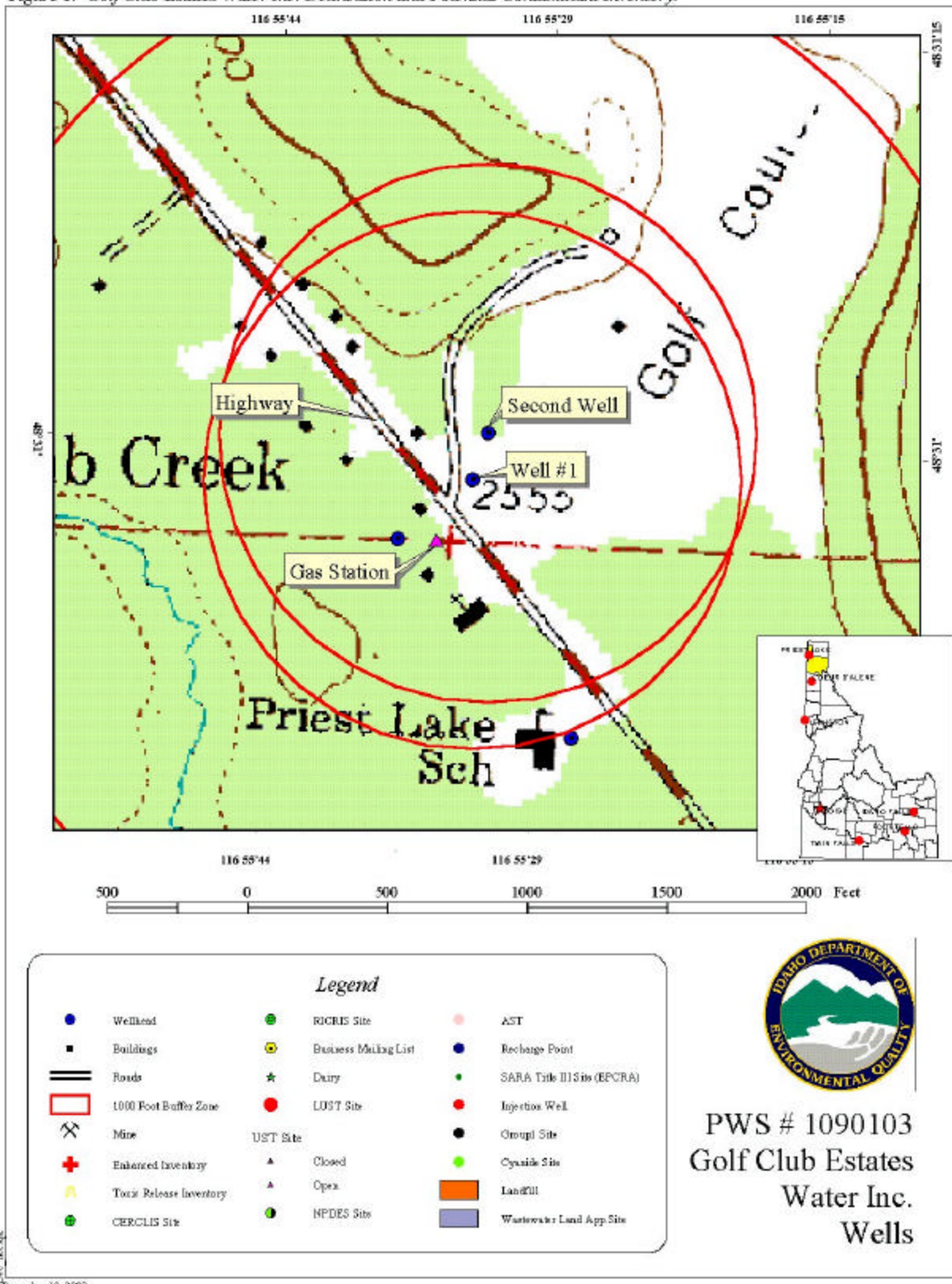
State IDEQ Office (208) 373-0502

Website: [http:// www.deq.state.id.us/water/water1.htm](http://www.deq.state.id.us/water/water1.htm)

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper of the Idaho Rural Water Association (208) 343-7001 for assistance with drinking water protection strategies.

Website: www.idahoruralwater.com

Figure 1. Golf Club Estates Water Inc. Delineation and Potential Contaminant Inventory.



DEC 18, 2002

December 18, 2002

Ground Water Susceptibility

Public Water System Name :

Golf Club Estates Water Inc

Well # :

WELL #1

Public Water System Number :

1090103

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1. System Construction		SCORE			
Drill Date	9/9/79				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1999				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		3			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		3			
3. Potential Contaminants & Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use	COMMERCIAL/RESIDENTIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	NO	NO	NO	NO	NO
Potential Contaminant Source & Land Use Score		2	2	2	2
Potential Contaminant / Land Use 1000-Foot Radius					
Contaminant sources present (Number of Sources)	YES. Gas Station, Golf Course	1	2	2	1
(Score = # Sources X 2) 8 Points Maximum		2	4	4	2
Sources of Class II or III leacheable contaminants or Microbials	YES	1	2	2	1
4 Points Maximum		1	2	2	1
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Irrigated Land in 1000-Foot Radius	25 to 50% Irrigated l Land	2	2	2	2
Potential Contaminant Source / Land Use Score 1000-Foot Radius		5	8	8	5
Cumulative Potential Contaminant / Land Use Score		7	10	10	7
4. Final Susceptibility Source Score		8	9	9	8
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility

Public Water System Name :

PRIEST LAKE GOLF COURSE

Well :

WELL #2

Public Water System Number :

1090103

2/25/03 9:34:33 AM

1. System Construction		SCORE			
Drill Date	4/9/00				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1999				
Well meets IDWR construction standards	UNKNOWN	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Zone	COMMERCIAL/RESIDENTIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	UNKNOWN	?	?	?	?
Potential Contaminant Source/Land Use Score		2	2	2	2
Potential Contaminant / Land Use - 1000-Foot Radius					
Contaminant sources present (Number of Sources)	YES	1	2	2	1
(Score = # Sources X 2) 8 Points Maximum		2	4	4	2
Sources of Class II or III leacheable contaminants or Microbials	YES	1	2	2	1
4 Points Maximum		1	2	2	1
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Irrigated Land in 1000-Foot Radius	25 to 50% Irrigated Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - 1000-Foot Radius		5	8	8	5
Cumulative Potential Contaminant / Land Use Score		7	10	10	7
4. Final Susceptibility Source Score		10	11	11	10
5. Final Well Ranking		Unknown	Unknown	Unknown	Unknown

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
 6 - 12 Moderate Susceptibility
 > 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.